FEB 11 1930

STATISTICAL BULLETIN
Metropolitan Life Insurance Co.

VOL. XI JANUARY, 1930 No. 1

NEW LOW RECORDS FOR MORTALITY IN 1929

Continued progress of the American and Canadian public health movement is shown in the mortality records for nearly 19,000,000 Industrial policyholders of the Metropolitan Life Insurance Company during 1929. There occurred 8.7 deaths per 1,000 lives, a figure identical with that for 1928. This group of insured persons comprises more than one-seventh of the total—and about a third of the urban population of the two countries. In past years its deathrate has always been an accurate index of what has happened among the people in general. In all probability, therefore, 1929 was a favorable health year for the entire populations. But the year established new low records for the diseases and conditions which have been the principal objectives of the health work of public and private agencies over the past three decades. The tuberculosis deathrate was 85.6 deaths per 100,000 policyholders, the lowest figure in the public health history of the American and Canadian wage-earning population. Typhoid fever, the scourge of city populations thirty years ago, registered the lowest deathrate ever recorded for this group of city dwellers, 2.3 per 100,000; measles and diphtheria mortality diminished, and for diseases and conditions associated with childbearing, the minimum deathrates of the twentieth century were recorded.

The total mortality of the year was nearly one-third less than that for 1911. If the 1911 deathrate had prevailed in 1929, 233,633 deaths would have occurred among these policyholders in that year, or 70,612 in excess of the actual number recorded! The protection afforded by the public health developments of the past few decades has not only reduced mortality, prevented sickness and alleviated suffering, but has enhanced the productivity of the United States and Canada by conserving its labor power and by reducing dependency. These are the major lessons of the public health record for the

year just closed. The more detailed aspects of that record may now be examined.

I. Favorable Aspects of the 1929 Mortality Record

Tuberculosis at a New Minimum

The outstanding public health fact of 1929 was the reduction of the tuberculosis deathrate to a new minimum. The deathrate now stands at 85.6 per 100,000. The previous low point was 90.6, recorded in 1928. Only four years ago an important milestone in the conquest of tuberculosis was passed, when the mortality rate dropped below 100 per 100,000 for the first time in the history of the American and Canadian wage-earning populations. As recently as 1915, no one was sufficiently optimistic to predict that the mortality from tuberculosis could be reduced to anything like the prevailing figure in so short a time.

The outlook at the present time is that the downward swing of the deathrate will continue, and ten years from now the tuberculosis deathrate among these wage-earners will be well on its way toward 40 deaths per 100,000. Between 1911 and 1929, tuberculosis deaths in the industrial population dropped 62 per cent. It will require a drop of only 53 per cent. from the present figure to bring the rate down to 40; and it is by no means improbable that such a decline will be witnessed among the insured by 1940.

Typhoid Fever No Longer an Important Cause of Death

Another new low point was reached in 1929, in the mortality rate for typhoid fever. The deathrate (2.3 per 100,000) marks a decline since 1911 of 89.9 per cent. Measures for the control of typhoid are being more widely extended from year to year; and even though the disease has already become an almost negligible item in the mortality records, still further declines in the deathrate may be confidently expected. Substantial progress may still be made in rural areas and in the smaller cities where the disease prevails at a fairly high rate.

New Low Point for the Communicable Diseases of Childhood

The deathrate for the four principal communicable diseases of childhood (measles, scarlet fever, whooping cough and diphtheria) in 1929 was only 16.3 per 100,000, or 14.2 per cent. below the previous

General

minimum of 19.0, recorded in 1928. The drop since 1911 has been 72.3 per cent.

The outstanding item in this group is diphtheria, with a 1929 deathrate of only 8.5 per 100,000, as compared with 9.5 (the previous minimum) in 1928, and with 27.3 per 100,000 in 1911. The decline since 1911 has been 69 per cent. The greatly reduced diphtheria deathrate of 1929 unquestionably reflects the increasing use of toxin-antitoxin as an immunizing agent and of early antitoxin treatment when the disease has once been contracted. Diphtheria is coming under control year by year and is destined to show much lower mortality in the near future. The measles deathrate in 1929 was also at a new minimum, and was approximately one-fifth the figure recorded for 1911. Scarlet fever duplicated its minimum deathrate of 1928 (2.6 per 100,000). There was a small rise in the mortality from whooping cough.

Lowest Rate on Record for Diarrhea and Enteritis

The deathrate for diarrhea and enteritis reflects closely the advancing standards of domestic and civic hygiene. The falling deathrate means growing protection of food and water supplies and higher intelligence in the care and feeding of children. The mortality rate for this cause has now declined to 7.8 per 100,000—or almost to one-quarter of the figure registered eighteen years ago. The present report does not include deaths of infants under one year of age, but the facts for these very young children are also available for three-quarters of the year 1929. Among these infants of insured wage-earners the diarrheal disease deathrate of 1929 was also the lowest ever recorded. The improvement is in evidence for both white and colored babies, and the latter achieved the greater gain in 1929.

Maternal Mortality Improved in 1929

One of the most encouraging developments in 1929 was the recording of a new minimum deathrate for diseases and conditions incidental to pregnancy and childbirth. In a year marked by a major outbreak of influenza, as in 1929, we ordinarily expect a rise in the mortality among pregnant and parturient women. The deathrate from these diseases did increase somewhat during the first quarter of the year; but not alarmingly, and to nothing like the extent which obtained in other influenza outbreaks. During the remainder of 1929 there was pronounced improvement, and the year closed with a deathrate of 13.5 per 100,000, lower by 4.9 per cent. than the previous minimum of 14.2 in 1928.

Suicides and Homicides

The suicide deathrate of these insured wage-earners was 8.5 per 100,000 in 1929, which is identical with that for 1928, but higher than for any other year since 1917. The disturbed economic conditions toward the end of 1929 apparently did not affect the suicide record of this group of the population.

The homicide deathrate declined slightly. The mortality has undergone only slight fluctuations during the nineteen-year period, the maximum figure being 7.4 and the minimum 5.8.

II. Unfavorable Aspects of the 1929 Mortality Record

For certain diseases and conditions the 1929 mortality record was somewhat unfavorable. The early months of the year experienced the heavier part of the wave of influenza and pneumonia which began in November of the preceding year. There was an increase also in mortality from organic heart disease, from cancer, diabetes and automobile accidents.

Influenza and Pneumonia

Nineteen twenty-nine would have registered the very best of all health records had it not been for the effects of the influenza epidemic which swept the United States and Canada last winter. In the month of January, the deathrate for all causes was higher than for any month of the decade. Thirty-one per cent. of all the deaths in that month were ascribed to influenza or pneumonia. In addition, the epidemic was responsible for greatly increased mortality from chronic organic conditions, more particularly heart disease and Bright's disease. A rise in mortality from these conditions has always occurred during major outbreaks of influenza. Health conditions, while somewhat better in February, were much worse than usual for that month. In March (the month which records the highest mortality rate in most years) the deathrate fell sharply; and in every subsequent month (save July, when the 1929 and 1928 figures were identical) 1929 showed improvement over 1928. By the end of the year, the handicap arising from the influenza outbreak was entirely overcome, even though the disadvantage at the end of the first quarter had amounted to 17.6 per cent. For influenza itself, the deathrate of 1929 was the highest since 1920.

Only four years (1927, 1925, 1924 and 1921) registered a lower pneumonia deathrate than that for 1929, despite the very high mortality which prevailed during the influenza outbreak. If it

had not been for the influenza epidemic, the year would probably have had the lowest pneumonia mortality rate ever recorded among these insured lives. The persistent downward trend in pneumonia mortality since 1900 has been held by some public health students to reflect the higher living standards of the American and Canadian populations.

Organic Heart Disease Deathrate Increased in 1929

The heart disease deathrate, in 1929, was 146.1 per 100,000 as compared with 144.4, the previous maximum, in 1928. The mortality in 1929 was three per cent. higher than in 1911. The rise in the deathrate from cardiac diseases has not been continuous. Between 1911 and 1918, the fluctuations were small. In 1919, following the great influenza pandemic, there was a drop of 19.7 per cent. Since 1919, however, the trend has been upward and an increase of 28.3 per cent. has been registered.

The rise in the rate for cardiac conditions in 1929 is chargeable almost entirely to the effects of the influenza epidemic, which hastened the deaths of many thousands of persons suffering with chronic diseases. After the epidemic had spent its force almost every month of 1929 showed substantially fewer heart disease fatalities than in the corresponding period of 1928. Heart disease, nevertheless, has been the leading cause of death in the industrial population in every year since 1921. Cardiac disease is of major importance also in causing disability and dependence. So far, we have not had a program of research, treatment and public education with respect to these diseases commensurate with their importance as causes of sickness and death.

Cancer Mortality Increases Again; Maximum Rate Since 1911

The cancer deathrate continued its slow, persistent increase to a new high point. The 1929 mortality rate was 77.3 deaths per 100,000 policyholders as compared with 77.0 in 1928. The 1929 deathrate was 13.7 per cent. in excess of that for 1911.

The most recent investigation into cancer mortality by the Metropolitan Life Insurance Company has developed certain important aspects of the upward trend of the deathrate, and has shown that the gravity of the cancer problem is much greater than it was only five years ago. From 1911 to 1922, the average annual increase in the cancer deathrate had been seven-tenths of one per cent. per year. But, with the facts for five more years available, it was found

that the average annual increase since 1911 has been over one per cent. for each of the last seventeen years! The mortality for cancer of the stomach and liver gave evidence of a significant increase between 1911 and 1927. Cancer of the breast, on the basis of the recent study, showed that the mortality is definitely increasing between 45 and 64 years. The most discouraging fact in the recent cancer investigation for these policyholders was that there was *no evidence of a significant decline* in the deathrate for cancer of any organ or part of the body!

Diabetes Mortality Registered a New High Record in 1929

The previous maximum deathrate for diabetes was 17.9 in 1928, and the rise in 1929 amounted to two per cent. The diabetes mortality rate has now been increasing continuously for five years. The increase as compared with 1911 was 38 per cent. The mortality from this disease was affected unfavorably by the influenza outbreak. At the end of the first quarter the diabetes mortality rate was 21 per cent. higher than for the corresponding period of 1928. Among Canadian Industrial policyholders the diabetes deathrate registered a decline in 1929.

The rise in the mortality from this disease has been confined to the older ages of life where insulin treatment is not so generally given as in the younger age groups. At the younger ages, under 25 years, there is some slight indication of declining diabetes mortality.

More Fatal Accidents in 1929

The mortality rate for accidents rose slightly in 1929. This was due almost entirely to the alarming increase in automobile fatalities, although there were also more deaths than in the preceding year from falls and machinery accidents. New minimum deathrates were recorded for burns and railroad fatalities. The 1929 deathrate for accidental drownings was the lowest on record, with a single exception.

Automobile Fatalities at a New Maximum

The situation with respect to automobile fatalities was so bad throughout 1929 that it was possible to announce, long before the year closed, that the deathrate would be much higher than ever before. At the end of the year, it developed that approximately one-third of all accidental deaths among the Industrial policyholders arose from the use of the automobile. The 1929 deathrate was 20.9 per 100,000, a rise of 12 per cent. in a single year, and an increase of

809 per cent. since 1911! It is estimated that there was a total of more than 31,400 automobile fatalities in the general population of Continental United States during 1929. This is the single item in the fatal accident situation where conditions have been going from bad to worse year after year. One-half of the automobile fatalities are "pedestrian" cases! From 35 to 40 per cent. of the fatalities concern children under fifteen years of age. The automobile, and its use and misuse, are about as great a menace to child life today as measles, scarlet fever and whooping cough combined.

The rise in automobile killings during 1929 to the unprecedented figure of 31,400, calls for the prompt and effective analysis of the engineering, physiological, psychological and legal facts involved. This increasing annual death toll can no longer be ascribed to mere "accidents." Adequate control measures must take into account the known factors of negligence, even malice and felony, present at the time or before these crippling and killing incidents arise! No life conservation problem in recent years has presented so many perplexing aspects. It is hoped that new light will be thrown on the real underlying factors in this deplorable situation by the time the next NATIONAL CONFERENCE ON STREET AND HIGHWAY SAFETY meets in Washington during May, 1930. The rights of the 31,400 persons who were killed and of approximately a million persons who were injured and crippled should be determined in relation to the privilege of using our highways for the transportation of goods and persons!

Alcoholism; Poisoned Beverages during 1929

Acute and chronic alcoholism caused 641 deaths of policyholders during 1929, with a deathrate of 3.4 per 100,000. This marks a slight increase over the record of 1928 when there were 599 deaths and a deathrate of 3.3 per 100,000. Deaths from acute poisoning from wood and denatured alcohol were not included in either of these totals. The 1929 alcoholism deathrate is nearly six times as high as that for 1920, the first year of National Prohibition, in which year the lowest mortality from alcoholism was recorded! The 1929 mortality rate is approximately double that for 1918, the final year of the World War; and nearly two and a half times as high as the figure for 1919, the "Wartime Prohibition" year. The mortality from alcoholism, since National Prohibition, has not been quite as high as for any of the years between 1911 and 1917. Nevertheless, if deaths from wood and denatured alcohol poisoning were added to the totals for years beginning with 1920, and if the comparison were limited to policy-

holders in the United States alone, the deathrates now prevailing would equal, or very closely approach, those for certain prewar years.

Alcoholism Deaths in the United States and Canada

The mortality from alcoholism has always been almost negligible in Canada, particularly in the Province of Quebec, where the Metropolitan has nearly 600,000 Industrial policyholders, among whom there were only three deaths from this disease in 1929. There were certain states in which the 1929 alcoholism deathrate was considerably in excess of the average. Among these were Maryland, Nebraska, Delaware, Rhode Island, Massachusetts, West Virginia, Vermont, New York, Pennsylvania and Kentucky.

Among approximately seventeen and three-quarter millions of policyholders in the United States, 628 of these 641 alcoholism deaths occurred, as compared with only eleven deaths among one and one-quarter millions of insured Canadians. During the eight-year period 1922–1929, there were 4,138 deaths from this cause in the experience of the Industrial policyholders of the Metropolitan Life Insurance Company. Of these, 4,087 occurred in the United States as compared with only forty-eight deaths in Canada! If Canadian wage-earners had had the same alcoholism deathrate that prevailed in the United States during 1922-1929, there would have occurred 288 deaths in eight years instead of the forty-eight deaths reported! In the wage-earning populations, at least, the alcoholism deathrate during the past eight years has been six times as high in the United States as in Canada.

Deaths from cirrhosis of the liver, which are largely of alcoholic origin, numbered 1,208 in 1929, as compared with 1,217 in 1928; the deathrate declined to 6.5 per 100,000, from 6.7, in 1928. The deathrate from this disease, unlike that for alcoholism, has shown little variation under National Prohibition. It is lower than for years prior to the World War.

Poisoned Beverages

Thirty deaths were charged to acute poisoning by wood or denatured alcohol in 1929, as compared with thirty-five in 1928 and twenty-nine in both 1927 and 1926. The maximum mortality from this cause of death occurred in the first year of National Prohibition (1920). With the exception of that year, and of 1921, deaths from acute alcoholic poisoning have been unimportant numerically among these policyholders.

III. Increased Longevity of Wage-earners, 1911 to 1928

The reduction in the deathrate in both the wage-earning and the general populations has greatly extended their expectation of life. Among Metropolitan Industrial policyholders, including infants, the expectation of life at birth in 1928 was 55.88 years, as compared with 46.63 years for 1911–1912—a gain of 9.25 years. Over the same period the gain in the life span of the general population was only 5.14 years. In 1911–1912, the expectation of life in the United States Death Registration States was 6.41 years more favorable than among Metropolitan Industrial policyholders. In 1928, the advantage had been reduced to only 2.30 years.

This alone shows that health conditions, in general, have been improving faster in the industrial group than in the population at large. This greater improvement has been effected in spite of the fact that the insured represent the millions of city dwellers who do the hard and hazardous work of industry, while the general population includes, among others, the farming and the better circumstanced city people who do not participate in industrial insurance to any great extent.

*Comparison of the Mortality Records of the Industrial and General Populations, 1911 and 1928**

The latest available mortality figures for the general population of the United States relate to the year 1928. Between 1911 and 1928 the deathrate for the general population declined only 11 per cent., as compared with a drop of 31 per cent. among Metropolitan Industrial policyholders. In 1911, the deathrate of these industrial wage-earners exceeded that in the general population by 24.3 per cent. This unfavorable margin decreased year by year, until in 1924, for the first time, the wage-earners' crude deathrate fell below that for the general population. In 1928, the crude mortality rate of insured wage-earners was lower than that of the general population (of comparable ages) by 3.2 per cent.

The decline in the mortality rate among the insured wage-earners from 1911 to 1928 resulted in the saving during the eighteen years of 558,219 lives. If the drop had been the same as obtained in the general population, only 198,852 lives would have been saved. It is thus apparent that *over and above* the gain expected by reason of the

*Comparisons between the deathrates of the Metropolitan Industrial policyholders and the United States Registration States relate to ages 1 to 74 for the general population and ages 1 and over for the insured.

decline in the general population, the more favorable insurance experience resulted in a net saving of 359,367 lives. The last two decades have witnessed greater advances in the fundamentals of health and well-being of the industrial classes of the population than have occurred during any similar period in human history.

Diseases Showing Greater Improvement Among Wage-earners

Distinctly better records for decline in mortality among insured wage-earners than for the general population were shown for typhoid fever, where the deathrate has dropped 88 per cent. in eighteen years in the industrial group as compared with an 81 per cent. decline in the general population. For the communicable diseases of childhood, the corresponding figures are 68 per cent. for insured wage-earners and 62 per cent. for the general population. Comparing these two groups further, the comparative declines were: for influenza and pneumonia combined, 28 per cent. and only 2 per cent.; for tuberculosis 60 per cent. and 50 per cent., respectively; for chronic nephritis, 24 per cent. and only 4 per cent.; for diseases of pregnancy and childbirth, 28 per cent. and 18 per cent.; and for accidents, 19 per cent. and only 6 per cent. Where the deathrate has increased, the comparison is also favorable to the wage-earning group. Thus, for cancer, their mortality rate has increased only 13 per cent. as compared with 32 per cent. in the general population. For diseases of the heart, the rise was only 2 per cent. between 1911 and 1928 among the insured as compared with 27 per cent. in the United States Registration States; and for automobile fatalities, 713 per cent. as compared with 859 per cent.

It is, of course, not possible to ascribe this more favorable experience to any one factor, however powerful. The greater improvement which has obtained since 1911 in the deathrate among Metropolitan Industrial policyholders, as compared with the general population, has come largely from the Company's activities in the fields of social service and public health among the many millions of insured people. It is to be remembered that during this period the Company has expended many millions of dollars in a well-rounded health campaign. It has given free nursing service to millions of people, distributed pamphlets printed in many languages dealing with the causes of tuberculosis and methods of preventing it, with the importance of personal and domestic hygiene, with the care of the teeth, with maternal and infant care, and with the prevention and care of the communicable diseases of childhood. All this has been reflected in a reduced death toll.

The Metropolitan's efforts have definitely shown that health work pays and that the gains have extended to a large proportion of the people of the two countries in which it operates.

METROPOLITAN LIFE INSURANCE COMPANY

Deathrates per 100,000 for Principal Causes. Weekly Premium-paying Business in Industrial Department. 1911 and 1919 to 1929. (Ages One and Over)

Cause of Death	1929†	1928	1927	1926	1925	1924	1923	1922	1921	1920	1919	1911
All Causes of Death	874.3	869.3	842.2	885.7	846.3	848.0	897.1	882.9	870.6	989.4	1063.0	1253.0
Typhoid fever	2.3	2.7	4.7	4.2	4.6	4.4	5.2	5.7	6.7	6.7	7.3	22.8
Communicable diseases of childhood	16.3	19.0	19.7	25.9	19.7	26.2	33.1	29.8	37.9	43.1	31.5	58.9
Measles	2.4	4.2	3.4	8.0	2.5	5.7	8.4	4.3	3.2	8.5	3.5	11.4
Scarlet fever	2.6	2.6	3.0	3.4	3.4	4.3	4.4	4.9	7.0	6.0	3.9	13.1
Whooping cough	2.9	2.7	3.1	5.0	3.6	3.5	4.8	2.6	3.9	6.6	3.2	7.1
Diphtheria	8.5	9.5	10.2	9.5	10.2	12.7	15.5	18.0	23.8	22.1	20.9	27.3
Influenza and pneumonia	109.5	94.8	78.7	105.6	88.3	84.4	107.7	95.3	76.5	159.5	214.1	131.2
Influenza	36.9	22.0	15.7	27.4	19.4	14.2	30.1	21.7	8.7	53.5	96.9	15.9
Pneumonia	72.6	72.8	63.0	78.2	69.0	70.2	77.6	73.7	67.8	106.1	117.2	115.3
Poliomyelitis	.6	1.2	2.0	.7	1.4	1.0	.7	.9	1.7	1.0	.6	1.6
Tuberculosis—all forms	85.6	90.6	93.8	99.5	98.2	104.4	110.5	114.2	117.4	137.9	156.5	224.6
Tuberculosis of respiratory system	76.2	80.0	83.0	87.9	87.0	93.4	100.6	103.6	105.6	124.0	141.6	203.0
Cancer—all forms	77.3	77.0	75.6	75.1	71.8	71.5	72.7	72.0	71.7	69.8	67.0	68.0
Diabetes mellitus	18.3	17.9	17.1	17.0	15.5	15.1	16.2	17.2	15.5	14.1	13.4	13.3
Alcoholism	3.4	3.3	3.5	3.7	3.0	2.9	3.0	2.1	.9	.6	1.4	4.0
Cerebral hemorrhage, apoplexy	57.7	57.6	56.0	56.5	54.4	61.1	61.9	62.9	62.1	61.3	59.8	64.2
Diseases of heart	146.1	144.4	134.7	136.4	128.7	125.2	128.7	126.7	117.4	117.0	113.9	141.8
Diarrhea and enteritis	7.8	8.7	9.1	10.5	12.3	11.3	11.1	10.8	14.2	15.8	16.9	28.0
Chronic nephritis (Bright's Disease)	69.2	71.8	70.8	74.9	71.2	66.5	69.6	70.3	68.0	70.8	73.5	95.0
Puerperal state—total	13.5	14.2	15.7	15.6	16.9	17.2	17.9	19.0	19.8	23.0	20.0	19.8
Puerperal septicemia	5.0	5.0	6.4	6.0	6.6	6.6	6.9	7.4	8.5	8.6	6.7	8.8
Puerperal albuminuria and convulsions	3.1	3.1	3.2	3.6	3.8	4.3	4.2	4.7	4.9	5.0	4.8	4.7
Accidents of pregnancy	1.5	1.6	1.3	1.7	1.6	1.6	1.8	1.7	1.6	3.1	3.0	1.7
Total external causes	78.9	77.8	79.8	77.2	78.3	76.9	77.8	71.8	72.0	72.0	94.2	97.9
Suicides	8.5	8.5	8.4	7.8	7.0	7.3	7.4	7.5	7.6	6.1	6.8	13.3
Homicides	6.5	6.8	7.4	7.2	7.4	7.2	7.3	6.3	6.7	5.8	6.9	7.2
Accidents—total	63.9	62.5	63.9	62.3	63.9	62.4	63.0	58.0	57.5	59.6	63.8	77.4
Accidental burns	4.8	5.3	5.3	6.1	6.1	6.4	6.3	6.1	6.6	8.1	8.1	8.8
Accidental drowning	6.4	7.1	6.8	6.3	6.5	7.3	6.7	7.3	8.2	6.7	8.6	10.2
Accidental traum. by fall	8.9	8.0	8.5	7.9	8.1	7.7	8.4	7.3	7.1	7.3	8.0	13.2
Accidental traumatism by machines	1.6	1.2	1.4	1.4	1.3	1.3	1.7	1.6	1.0	1.7	1.6	1.8
Railroad accidents	3.8	3.9	4.1	4.2	4.0	4.0	4.9	4.1	3.9	5.2	5.7	9.5
Automobile accidents	20.9	18.7	18.7	17.0	16.8	15.9	15.4	13.6	12.2	11.1	10.7	2.3
All other accidents	17.4	18.3	19.1	19.4	21.2	19.7	19.5	18.0	18.5	19.5	21.2	31.6
War deaths	*	.....	*	*	*	*	.....	.1	.1	.5	16.6	.....
Other diseases and conditions	187.7	188.3	181.0	183.6	183.4	180.9	181.7	185.1	190.5	197.8	193.8	283.5

†All 1929 deathrates subject to slight correction, as they are based on a provisional estimate of lives exposed to risk.
*Deathrate less than .05 per 100,000.

THE ULTIMATE POPULATION OF THE UNITED STATES

The continuation of the present tendency of a rapid decline in the birthrate will in all probability result in bringing about a virtually stationary population in the United States by the year 1970. This means that at that time the country will be entirely dependent upon immigration to add to the numbers of its population. And at that time, under present immigration restrictions, the population of the United States will be approximately one hundred and fifty millions. These are the main conclusions in a paper presented by Drs. Dublin and Lotka of the Metropolitan Life Insurance Company before the AMERICAN STATISTICAL ASSOCIATION and the AMERICAN SOCIOLOGICAL SOCIETY at the recent meetings held in Washington.

The year 1970 may seem rather far off. But the fact is, we are really even now much nearer to a balance between fertility and mortality than the crude figures of birthrate, deathrate and natural rate of increase seem to indicate. For, as was shown by the authors four years ago, the *true* rate of natural increase, computed with proper corrections for abnormalities in the age distribution of our population, is materially less than the crude figure found simply as the excess of the birthrate over the deathrate. For, we are still profiting, at the present day, from the residual effects of past high birthrates and immigration, both of which give to our population, as constituted today, a relatively large contingent of persons in the reproductive period of life. This tends, on the one hand to swell our birthrate, because in these ages reproduction is most active, and to reduce our deathrate, because here mortality is at a relatively low ebb. How different a picture is presented by the crude rate and the true rate of natural increase, corrected for the influences just mentioned, may be seen from the following figures. The crude rate per thousand (among white persons), for the years 1920, 1925, 1926, 1927, 1928, forms the following series: 10.7; 9.8; 8.6; 9.4, and 7.8. The corresponding true rates, as nearly as it is possible to determine them in the absence of a recent census (the last one was in 1920), are as follows: 5.2*; 4.7; 3.3; 4.0, and 2.1. It is thus at once seen that in 1928 we had already reached a point at which the true rate leaves hardly any margin above the zero mark. In fact, the estimate of the further course of events indicates that by the year 1930, or very soon after, the true rate of natural increase

*This figure differs slightly from the 5.5 given in the original publication. The difference is due to a minor arithmetical correction.

will actually have descended to zero. We are thus much nearer to the balance between fertility and mortality than had been realized.

After the zero has been passed, the true rate of natural increase will become negative, that is, the effective fertility of our population will actually be insufficient *permanently* to hold us on a stationary level. Nevertheless, as already remarked, the birthrate will still, owing to the effect of past influences, remain above the deathrate, until somewhere about 1970. Estimates of birthrates and deathrates, with an immigration of 200,000 per annum, carried from the present to that date, indicate that the American population of the United States will then number, as we have said, about 150,000,000 persons. This is about twenty millions below the estimate reached by Pearl and Reed some years ago. But not only does the estimate of the total population for that epoch fall below that given by the Pearl curve: there is another important difference. According to the new estimate the population in 1970 will be practically at a standstill, gaining only the small number which the immigration laws will then permit. According to the Pearl curve, the point of time when the rate of increase of the population fell to this level would not be reached until the year 2015.

While allowance must be made for a margin of uncertainty in these estimates, it seems clear that, with such birthrates as we may reasonably expect in the near future, with the fairly stationary mortality, and with existing restrictions on immigration, we are nearer to a stationary state of our population than we should have expected under the older conditions and on the basis of the logistic curve as applied to the United States population.

HEALTH RECORD FOR DECEMBER, 1929

The December, 1929, deathrate among the Industrial policyholders (8.7 per 1,000) was lower than any previous December figure. Health conditions during the month were outstandingly better than during the final month of 1928, when the influenza epidemic of 1928–1929 was taking a large death toll throughout the United States and Canada. In addition to influenza and pneumonia, the following causes of death showed improvement as compared with December, 1928: whooping cough, diphtheria, tuberculosis, diabetes, respiratory diseases other than pneumonia, diarrhea and enteritis and chronic nephritis. The deathrate for accidents registered an increase, as did also that for automobile fatalities.

The general deathrate for the large cities of the United States, in December, was 13.3 per thousand. This was higher than for the previous month (12.0), but much lower than for December, 1928 (15.1). There was more sickness in December, as compared with November, from influenza, measles, scarlet fever and smallpox, but fewer cases of diphtheria, poliomyelitis and typhoid fever. Comparison with December, 1928, shows greater prevalence of scarlet fever and smallpox, but fewer cases of diphtheria, influenza, measles, poliomyelitis and typhoid fever.

Two diseases, measles and smallpox, were much more prevalent in December than in the previous month. Measles cases, in 26 States, increased from 6,318 to 10,878, with the more noteworthy rises in Ohio, Illinois, Minnesota, North Dakota, West Virginia, Arizona and California. Reports for smallpox from 43 States show a rise from 3,172 cases in November to 4,477 in December. The more pronounced increases were in Wisconsin, Iowa, Nebraska, North Carolina, Oklahoma, Texas, Washington and California.

An outbreak of epidemic cerebrospinal meningitis at Indianapolis, Ind., was reported to have caused 36 deaths up to December 30. Sixty cases were reported in Indianapolis, in December, and 13 in other parts of the State.

The following are among the noteworthy health activities of the month. New Mexico was admitted to the birth and death registration areas. Only two states, Texas and South Dakota, are still outside of the Registration Areas. Illinois has made application for admission into the United States Morbidity Registration Area, which is being organized, and will become effective on July 1, 1930. The Board of Supervisors of Westchester County, New York, voted to establish a County Health Department. Westchester is the fourth county in the State to establish such a unit. The health authorities of New York City have accepted an offer of the Bellevue-Yorkville Health Demonstration of a fund of $100,000, which will be used to provide free medical laboratory service to the poor of the city through private physicians. Qualified nurses and roentgen-ray equipment will be placed at the Health Department's disposal.

The following table shows the mortality among the Industrial policyholders for December, 1929; November, 1929, and December, 1928, together with the cumulative rates for the years 1929 and 1928.

METROPOLITAN LIFE INSURANCE COMPANY

Deathrates* per 100,000 for Principal Causes, Premium-paying Business in Industrial Department (Annual Basis)

MONTHS OF DECEMBER, 1929; NOVEMBER, 1929, AND OF DECEMBER, 1928

CAUSES OF DEATH	RATE PER 100,000 LIVES EXPOSED*				
	Dec., 1929†	Nov., 1929†	Dec., 1928‡	Year 1929†	Year 1928‡
TOTAL—ALL CAUSES	869.6	790.7	926.0	916.2	916.6
Typhoid fever	2.1	2.4	1.7	2.3	2.7
Measles	1.8	.4	1.4	2.9	5.2
Scarlet fever	3.3	1.8	2.4	2.6	2.7
Whooping cough	3.3	3.7	4.8	5.6	5.7
Diphtheria	10.4	11.8	11.3	8.6	9.7
Influenza	20.5	13.1	48.8	41.1	24.8
Tuberculosis (All forms)	74.1	73.2	75.8	85.2	90.1
Tuberculosis of resp'y system	66.2	65.4	68.3	75.2	78.8
Cancer	75.1	73.8	74.0	76.0	75.7
Diabetes mellitus	16.7	16.6	18.0	18.0	17.6
Cerebral hemorrhage	57.7	50.6	57.3	56.9	56.7
Organic diseases of heart	144.5	126.1	144.3	144.0	142.2
Pneumonia (All forms)	87.9	64.1	103.9	86.9	89.3
Other respiratory diseases	10.8	9.2	19.5	11.4	12.4
Diarrhea and enteritis	12.7	15.0	14.0	20.4	24.0
Bright's disease (Chronic nephritis)	65.6	63.1	68.6	68.1	70.5
Puerperal state	11.4	11.1	9.9	13.3	13.9
Suicides	7.5	7.7	7.1	8.4	8.3
Homicides	6.9	5.3	6.9	6.4	6.7
Other external causes (excluding suicides and homicides)	65.6	61.7	59.4	63.9	62.6
Traumatism by automobiles	21.3	23.9	20.5	20.6	18.4
All other causes	191.8	179.8	196.8	194.0	195.7

*All figures in this table include infants insured under one year of age.

†All 1929 deathrates subject to slight correction, as they are based on provisional estimate of lives exposed to risk.

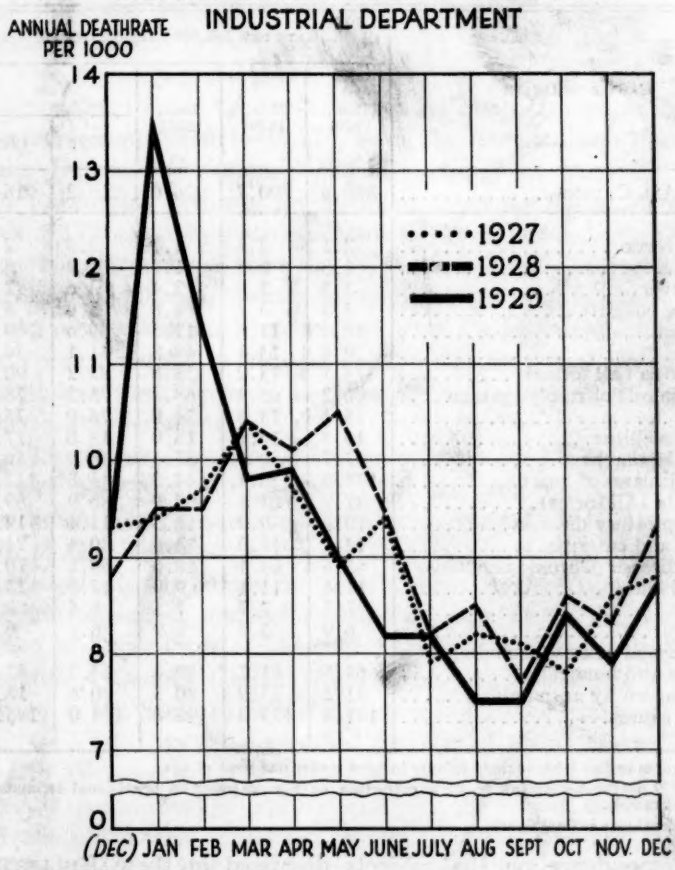
‡1928 deathrate is final figure.

Correspondence on the subjects discussed in these BULLETINS may be addressed to: The Editor,

STATISTICAL BULLETIN,
Metropolitan Life Insurance Company,
1 Madison Avenue, New York City.

DEATHRATES
FROM ALL CAUSES

METROPOLITAN LIFE INSURANCE CO.
INDUSTRIAL DEPARTMENT



1927	9.4	9.7	10.4	9.7	8.9	9.4	7.9	8.2	8.1	7.8	8.6	8.8
1928*	9.5	9.5	10.4	10.1	10.5	9.5	8.2	8.5	7.7	8.6	8.3	9.3
1929	13.4	11.4	9.8	9.9	9.0	8.2	8.2	7.5	7.5	8.4	7.9	8.7

* Rates for 1928 are final

METROPOLITAN LIFE INSURANCE COMPANY PRESS
NEW YORK, U.S.A.
77886